

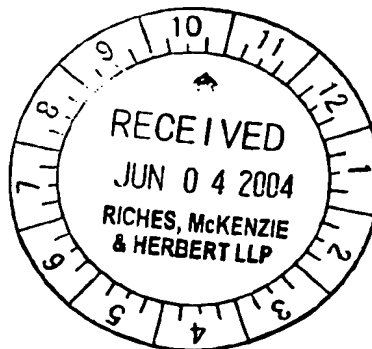


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June 2, 2004

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Application No. : 2,366,145
Owner : KABUSHIKI KAISHA KOBE SEIKO SHO (KOBELCO STEEL, LTD.)
Title : HARD FILM FOR CUTTING TOOLS, CUTTING TOOL COATED WITH HARD FILM, PROCESS FOR FORMING HARD FILM, AND TARGET USED TO FORM HARD FILM
Classification : C23C-8/36
Your File No. : P112001
Examiner : M. Morgovsky

YOU ARE HEREBY NOTIFIED OF :

- A REQUISITION BY THE EXAMINER IN ACCORDANCE WITH SUBSECTION 30(2) OF THE *PATENT RULES*;
- A REQUISITION BY THE EXAMINER IN ACCORDANCE WITH SECTION 29 OF THE *PATENT RULES*.

IN ORDER TO AVOID MULTIPLE ABANDONMENTS UNDER PARAGRAPH 73(1)(A) OF THE PATENT ACT, A WRITTEN REPLY TO EACH REQUISITION MUST BE RECEIVED WITHIN 6 MONTHS AFTER THE ABOVE DATE.

This application has been examined as originally filed.

The number of claims in this application is 20.

The examiner has identified the following defects in the application:

A search of the prior art has revealed the following:

References Applied:

Japanese Patents

297365

038653

04-128363

October 24, 2000

February 8, 2000

April 28, 1992

Abe et al.,

Ohara et al.,

Oshida et al.,

Canada

OPIC  CIPO

Claims 1-20 do not comply with Paragraph 28.2(1)(b) of the Patent Act because these claims include subject matter disclosed in the cited references before the claim dates.

Teachings of Abe's et al., Patent describe a sputtering target having a composition, as defined, which is used to produce a film on cutting tool of the same composition as the target.

Ohara's et al., Patent is directed to a die having a surface film which simultaneously improve thermal crack resistance and oxidation resistance, said film is composed of $(\text{Ti}_{(1-x-y)} \text{Cr}_x \text{Al}_y) \text{N}$, as defined.

Oshida's et al., Patent relates to a composite material having superior wear and heat resistance by forming a Ti-Al-Cr coating film of a specified composition on the surface of a base material.

Prior Art describes the feature of the invention as claimed, particularly a hard film for cutting tools having composition, as defined, and a sputtering target for producing said film. Abe's et al., Patent discloses a sputtering target having a composition of $\text{Al}_x \text{Ti}_{1-x-y} \text{M}_y \text{R}_z$, where M is one or more kinds of W and Mo, R is one or more kinds of rare metal or misch metal and $0.05 < x < 0.7$, $0.02 < y < 0.25$ and $0.0005 < z < 0.005$. M, which is present in atomic ratio of $0.02 < y < 0.25$, is revealed to further contain chromium and/or silicon. Hence, atomic ratios of Al, Ti, Cr and Si overlap atomic ratios for these metals in a hard film as claimed in the present application. While the amounts of Cr and Si are not clear from an abstract, it is believed that because of y atomic ratio range it may very well include Cr in the amounts of less than 0.06 and Si in the atomic ratio of less than 0.1 in addition to W and/or Mo. By using the target, as described by Abe, one may produce a hard film which will be identical to a film as presently claimed by applicant. Even though Abe does not specifically teach a relative density value of said sputtering target, given the fact that the composition of said sputtering target and the produced film are the same as an inventive target and a film which is obtained using the latter, the relative density, as interpreted would necessarily be higher than 95%. Thus, a hard film for cutting tool, as defined by applicant, is fully disclosed in Abe's et al., Patent. Ohara's et al., Patent relates to a die having a surface film composed of $(\text{Ti}_{(1-x-y)} \text{Cr}_x \text{Al}_y) \text{N}$, where $0.02 < x < 1.0$ and $0.02 < y < 0.7$. Atomic ratios for Ti, Al and Cr taught by patentee clearly overlap atomic ratios for these metals in a film as claimed by applicant. Thus, cited patents, singularly or combined, fully disclose an inventive subject matter as presently claimed. Therefore, claims 1-20 contain subject matter of a non-patentable significance over the teachings of the prior art and must be amended in view of the references to overcome the objection.

Claims 1-5 and 16-20 are believed to be obvious over Oshida's et al., Patent. Patentee teaches a composite material which forms $(\text{Ti}_{(1-x-y)} \text{Al}_x \text{Cr}_y) \text{N}$ coating film of a specific composition on the surface of a base metal where in said film $x < 0.8$ and $0.2 < y < 0.7$. It is further revealed that when Cr is present in the amount which lies outside the specified range heat, oxidation resistance and hardness of the film are deteriorated. While Oshida clearly points out that the presence of Cr in atomic ratio of less than 0.2 decreases the quality of the film, it is, however, considered as being obvious to a person skilled in the art, especially in view of the teachings of Ohara' and Abe' Patents, who would be clearly motivated to produce hard film

which have Cr content lower than 0.06 (up to 0.02) in the film to arrive at the present invention as claimed.

Essential feature of the invention such as crystal structure of a film for cutting tools having predominantly sodium chloride structure, is omitted from claim 1 and must be incorporated within the body of the independent claim to meet the objection. Applicant is referred to page 4 (see 1st and 2nd full paragraphs) of the description where the pertinent subject matter is discussed.

Claim 1 is indefinite and does not comply with Subsection 27(4) of the Patent Act in view of the use of the expression " $0 \leq c \leq 0.1$, $0 \leq d \leq 0.1$, $0 \leq c+d \leq 0.1$ " (lines 3 and 4). Applicant could make the preferred embodiments the subject matter of another claim.

Claims 6, 12 and 16 are indefinite and do not comply with Subsection 27(4) of the Patent Act in view of the use of words "mainly" (claim 6, line 2), "slightly" (claim 12, page 90, line 4) and "relative" (claim 16, line 2). The meaning of the mentioned terms are open to interpretation.

Claims 7, 8 and 13 are indefinite and do not comply with Subsection 27(4) of the Patent Act. The expressions "the sodium chloride structure" (line 2 in claims 7 and 8), "the (111) plane" (claim 7, line 3; claim 9, line 2) and "the bias voltage" (claim 13, line 2) have no positive antecedents.

Claim 11 is indefinite and does not comply with Subsection 27(4) of the Patent Act in view of the use of the expression "a film-forming gas atmosphere and accelerating the conversion of said metal and film-forming gas into a plasma" (lines 3 and 4). Use of the expression "film-forming gas" and term "accelerating" in the above expression does not properly delimit the intended features of the invention from the teachings of the prior art. Applicant must further restrict the scope of the process claim along subject matter of claim 12 to eliminate the objection. Moreover, applicant must not use subject matter of a product claim to advance the patentability of a process claim, the latter has to be defined in terms of distinct process steps. Appropriate amendment is necessary.

Claim 15 is indefinite and does not comply with Subsection 27(4) of the Patent Act in view of the use of the expression "the reactant gas" (line 2). Applicant is reminded that the consistency of the language of the specification is a basic requirement and, accordingly, must be complied with to address the objection.

Claim 16 is indefinite and does not comply with Subsection 27(4) of the Patent Act for being directed to the desired result rather than to the combination disclosed to achieve that result. Applicant must adequately define the composition of a target to properly claim an inventive subject matter.

Figure 1 of the Drawings must be labelled as Prior Art.

A statement in an application, such as found on page 87, last paragraph, which incorporates by reference any other document, does not comply with Subsection 81(1) of the Patent Rules.

Applicant must correct references to Figures 6(A) and 6(B) (see lines 3 and 8 on page 27) to meet the objection under Paragraph 27(3)(a) of the Patent Act.

In view of the foregoing defects, the applicant is requisitioned, under Subsection 30(2) of the Patent Rules, to amend the application in order to comply with the Patent Act and the Patent Rules or to provide arguments as to why the application does comply.

Under Section 29 of the *Patent Rules*, applicant is requisitioned to provide an identification of any prior art cited in respect of the United States and European Patent Office applications describing the same invention on behalf of the applicant, or on behalf of any other person claiming under an inventor named in the present application, and the patent numbers, if granted. Amendment to avoid references cited abroad may expedite the prosecution. In accordance with Subsection 29(3) of the *Patent Rules*, if the particulars are not available to the applicant, the reason why must be stated.

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